

City of Tallahassee, FL

Full-Scale Implementation of Automated Demand Response

Abstract

The City of Tallahassee's Automated Demand Response project involves the deployment of customer systems, load control programs, and distribution automation equipment. The City of Tallahassee is installing customer systems and programs to provide consumers with information, choices, and technologies to better manage their electricity usage while reducing distribution system peak demand and correlated pollution and cost impacts. Distribution projects include the deployment of a communications network, automated devices, and the upgrade of the distribution management system (DMS), which enables interoperability with existing and new devices. The City of Tallahassee expects distribution automation to improve the reliability of electric service and to enhance monitoring and optimizing distribution system conditions when demand response events are initiated.

Smart Grid Features

Communications infrastructure includes existing advanced metering infrastructure (AMI) communications systems, new customer alert notification systems, radio frequency communications to support distribution monitoring, and automation equipment. Application upgrades and integration projects are implemented on DMS and meter data management systems (MDMS). An automated demand response notification system is used to notify customers of upcoming peak demand events and to issue demand response requests to customers. This platform can notify customers through many mediums, including Internet, cell phones, text messages, and fax alerts. A new radio frequency communications system provides grid operators with monitoring and control capability for distribution automation equipment. Further integration of this equipment involves upgrade of many core applications for utility monitoring and control, including the MDMS, the outage management system, and the supervisory data control acquisition (SCADA) system.

Advanced electricity service options include evaluation of programmable communicating thermostats (PCT) for residential customers. Once deployed, these thermostats will enable participating customers to program home heating and cooling settings that respond to peak demand events and electricity costs. These devices will provide residential customers with information feedback and control options to reduce electric costs. The thermostats will help lower and offset distribution system peak demand by enabling customers to voluntarily and automatically reduce their demand through thermostat setting adjustments.

At-A-Glance

Recipient: City of Tallahassee

State: Florida

NERC Region: Florida Reliability Coordinating Council

Total Budget: \$17,781,108

Federal Share: \$8,890,554

Project Type: Customer Systems

Equipment

- Demand Response Control Devices for up to 100 Sites
- Customer System Communication Systems
- Distribution Automation Equipment for 30 out of 138 Circuits
 - Over 90 Automated Distribution Circuit Switches
 - 1 Automated Capacitor
 - 1 Automated Regulator

Time-based Rate Programs

- Demand Response Credit

Key Targeted Benefits

- Improved Electric Service Reliability and Power Quality
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

City of Tallahassee, FL (continued)

Demand Response control devices include up to 100 automated control devices for commercial sites. Commercial customers have the option to volunteer for this program, which involve devices that automate the process of reducing electric consumption at commercial buildings during peak demand events, particularly for air conditioning. Participating customers receive rebates and reductions in their electric costs due to curtailments of non-critical loads.

Time-based rate programs include a rate option associated with the commercial automated demand response program. This rate provides customers with a credit on their monthly electric bill relative to the amount of electric demand they are able to cut at critical peak times. In most cases, customers receive notice of a pending event a day ahead, and the frequency and duration of events is limited to minimize disruptions. This option, in conjunction with the other existing rates including residential time-of-use, provides customers with greater control over their electrical costs and bills and reduces peak demand.

Distribution automation systems includes the installation of new automated feeder switches and reclosers together with the necessary software platform and communications required to operate the automated system as well as to provide for the remote monitoring and operation of the automated devices. This equipment automates many distribution system grid management functions such as monitoring the distribution grid (“grid”), automatically identifying and isolating faults on the grid and restoring service to unfaulted segments of the distribution grid, stabilizing power disturbances on the grid, and providing for the remote operation of the switches and reclosers from the system control center. New communications and applications coordinate the new equipment and provide grid operators with greater visibility and control of the distribution system utilizing the SCADA system. These improvements enhance distribution system reliability, reduce restoration time, and reduce the number of customers affected by sustained outages. These systems improve the efficiency of the distribution system by optimizing circuit voltages and power factor.

Timeline

Key Milestones	Target Dates
Commercial direct load equipment installation start	Q1 2011
Distribution automation installation start	Q1 2012
Residential thermostat evaluation start	Q1 2011
Communications infrastructure deployment start	Q3 2011
Commercial direct load equipment and distribution automation installation complete	Q2 2014
Residential thermostat evaluation complete	Q2 2014
Communications infrastructure deployment complete	Q2 2014

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